Summer 6-26-2019

Quality Assurance Mechanisms in an E-commerce Platform Sales: The Moderating Effect of Quality Disclosure Transparency

Tiantian Yao
School of Economics and Management, China University of Geosciences, Wuhan, 430074, China

Zhen Zhu
School of Economics and Management, China University of Geosciences, Wuhan, 430074, China, zhuzhen2008@gmail.com

Quality Assurance Mechanisms in an E-commerce Platform Sales: The Moderating Effect of Quality Disclosure Transparency

*Tiantian Yao, Zhen Zhu**
School of Economics and Management,
China University of Geosciences, Wuhan, 430074, China

Abstract: Based on the two-dimensional classification of quality assurance mechanisms, this study capitalizes on an adjustment event of quality disclosure strategy on Ctrip.com in June 2017, and uses the sales data of online outbound package tour products to investigate the impact of transparency of quality disclosure on sales, as well as its moderating effect on the relationship between eWOM valence and sales. We uncover following interesting findings as follows. First, the valence of eWOM has a curvilinear (inverted U-shaped) relationship with sales. Second, the transparency of quality disclosure has a positive moderating effect. Our study reveals how the information transparency strategy influence the development of the platform ecosystem.

Keywords: E-commerce platform, Quality assurance mechanism, Quality disclosure, Information transparency strategy, Platform governance

1. INTRODUCTION

With the rapid development of Internet technologies, e-commerce platforms are becoming the leading innovators in China economy. However, the separation of buyers and sellers in time and space leads to the asymmetry of product quality disclosure and opportunistic behavior of complementors. In digital markets, quality assurance mechanisms, designed by e-commerce platforms, ensure the consumers' right of knowing the quality information of products.

Dranove and Jin[1] classified quality assurance mechanisms into two categories: self-generated quality assurance and certification-based quality disclosure. Electronic word-of-mouth (eWOM) is a common self-generated quality assurance. eWOM, generated by buyers, reduces the quality signal deviation introduced by the self-reported information (such as advertisements and product introductions of sellers), before the purchasing. The quality information in eWOM is easy to be recognized and accepted by consumers. It becomes a crucial regulatory approach for e-commerce platforms to promote product quality management. In addition, quality disclosure from third parties such as industry associations, governments, and professional organizations is the another important quality assurance mechanism[2]. However, due to the lack of professional certification capabilities, e-commerce platforms are still exploring how to promote quality disclosure. Current platform quality supervision is still in a background mode, which is obscure to consumers (such as the examinations before suppliers entering the platform), also there is no mature and effective front-end disclosure solution. Moreover, the opacity of quality disclosure mechanisms made consumers not well aware of the effectiveness of them, and even doubtful about them. Therefore, it may be an effective strategy to strengthen consumer awareness by improving the transparency of quality disclosure.

In fact, certification-based quality disclosure mechanisms benefit from strong market power and administrative norms. By continuously improving the transparency of quality disclosure, relevant quality assurance signals are strengthened in market transactions, platform governance, and the processes of consumer identification. However, transparent quality disclosure yields a significant crowding out effect on low-quality

* Corresponding author. Email: zhuzhen2008@gmail.com (Zhen Zhu)

products, further inhibits the network effects in the two-sided market and negatively affects the market share of the platform. Therefore, for some growing e-commerce platforms, it is necessary to be very cautious when deciding which transparency strategy of assurance mechanism to use. Previous literature has confirmed that e-commerce platforms could reshape business models by adjusting pricing strategies and improving competition mechanisms based on information elements, such as product, price, cost, inventory, and process[3, 4]. Most existing researches focus on the role of price transparency strategies in B2C and B2B markets, while there are little researches on the transparency of product quality disclosure. Thus, our research questions are: 1) how does quality disclosure transparency of the platform affect online sales and 2) how does it affect the relationship between self-generated quality assurance and online sales?

This study capitalizes on the opportunity of a quality disclosure strategy adjustment on Ctrip.com in June 2017 and uses online sales data of outbound package tour products. The results confirmed the positive moderating effect of the transparency of quality disclosure. This paper offers more choices of non-price strategy in platform governance, and applies the information transparency theory to the new context of product quality governance on e-commerce platforms. We also provide a new evidence of the impact of information transparency strategy on the development of platform ecosystem.

2. LITERATURE REVIEW AND HYPOTHESIS

2.1 Two types of quality assurance mechanisms

Quality assurance mechanisms are a set of management strategies designed to disclose quality information. Quality assurance mechanisms can be classified into two categories: self-generated quality assurance and certification-based quality disclosure[1]. The former mainly delivers product quality information to consumers through brands, guarantees and word of mouth. The latter is defined as an effort by a certification agency to systematically measure and report product quality. The comparison of these two types of quality assurance mechanisms is shown in Table 1. As indicated in this table, the quality information of self-generated quality assurance tends to describe the horizontal product dimensions, thus consumers can find products that best meet their idiosyncratic needs. The quality information provided by certification-based quality disclosure is about vertical product attributes. The quality of the product can be judged based on the quality disclosure information. These two mechanisms complement each other in the transmission of quality signals.

Table1 Comparison of two quality assurance mechanisms

		Self-generated quality assurance mechanism	**Certification-based quality disclosure mechanism**
Common		Transmit quality signals to consumers	
Difference	Signal source	Enterprises, consumers	third-party certifiers, industries or governments
	Information verifiability	difficult to verify	easy to check
	Information credibility	need to be identified	relatively reliable
	Information representation	non-standardized, different forms	standardization, may be not detailed
	Relationship with quality	indirectly clarify product quality	directly explain the quality parameters
	Disclosure of information attributes	partially, one aspect will be more detailed	overall, more concentrated

2.2 Quality assurance mechanisms in e-commerce platforms

As an important self-generated quality assurance mechanism, and valence is considered as a the most representative metric of eWOM [5]. Low valence indicates a negative attitude of customers on the product, while

high valence indicates a positive one. According to expectation-confirmation theory[6], post-purchase satisfaction of a product is the function of expectation, perceived performance, and disconfirmation of belief. In e-commerce platforms, the low valence of a product is associated with low consumer satisfaction of the product quality. A severe mismatch between product quality expectation and perception leads to a reduction in product purchase desires. As valence increases, the gap between the expectation quality and the actual perception quality decreases. It indicates that the lower quality uncertainty conveyed by valence leads to higher consumers' purchase desire. However, when valence is extremely high, due to the consumer's previous experiences of quality fraud, there may be a mismatch between pre-purchase quality expectations and post-purchase perceived performance, and consumers subconsciously suspect high valence[7], which in turn reduces the possibility of purchase. Thus, we propose following hypothesis:

H1: The relationship between valence and online sales is inverted U-shaped.

Quality disclosure is a non-price platform governance strategy that includes design content and information transparency. This paper focuses on the latter. An increasing transparency of information leads to an increasing in information visibility and a decreasing consumer uncertainty on product perception[8]. It helps consumers differentiate product quality and guides them to make rational purchase decisions, and it is easier to find products that meet their needs, which results in higher purchase intentions. Thus, we propose following hypothesis:

H2: The higher the transparency of quality disclosure, the higher the online sales of products.

Two quality assurance mechanisms yield complementary effect in the dimensions of signal source, information verifiability, credibility, expression, and disclosure attributes. In this study, quality disclosure transparency is the extent to which consumers can perceive and acquire when the platform uses product transparency strategies to disclose quality information. The quality certification information reflects the vertical product attributes as a quality signal, but the information obtained by consumers is different in different transparency environments. When the transparency of quality disclosure is high, there will be more quality information of platform certification disclosure. Then, it can play the role of "quality endorsement", so will the reliability of valence be further verified. Conversely, the quality endorsement doesn't play its role in an opaque platform environment. Thus, we propose following hypothesis:

H3: Compared to the lower quality transparency strategy, the higher transparency strategy mitigates the inverted U-shaped relationship between valence and online sales.

3. DATA AND EMPIRICAL ANALYSIS

3.1 Data and Measures

We use the data from the largest travel e-commerce platform in China——Ctrip.com. The platform implemented a new quality disclosure strategy at the end of June 2017. The updated quality disclosure strategy re-evaluates the core service elements of all the products in the transportation, hotel, travel experience, restaurants and shopping arrangements, and built a new rating scheme. Therefore, the quality disclosure was more transparent. We collected data of outbound package tour products that leave from 15 major domestic cities and target at 15 major outbound destinations. The data includes the number of tourists, valence, volume, prices, and season. The data was collected by a script every half month from March 2017 to October 2017.

The panel-level mode is specified in following equation:

$$\begin{aligned}\ln Sales_{it} = {} & \beta_1 Season\_1_t + \beta_2 Season\_2_t + \beta_3 \ln Price_{it} + \beta_4 \ln Volume_{it} + \beta_5 (\ln Valence_{it})^2 \\ & + \beta_6 \ln Valence_{it} + \beta_7 PIT_t + \beta_8 (\ln Valence_{it})^2 \times PIT_t + \beta_9 \ln Valence_{it} \times PIT_t + \beta_0 + u_i \\ & + \varepsilon_{it}\end{aligned}$$

Where $Sales_{it}$, is the number of tourists of product i during t period, $Valence_{it}$ is the average score of the product i as of the t period, PIT_t is a dummy variable of the disclosure transparency. It is recorded as 0 before the event and 1 after the event. We also controlled the season factor, product price and review volume. We use dummy variables to capture the change of seasons. March and April belong to the first quarter ($Season\_1_t$), May, June and July belong to the second quarter ($Season\_2_t$), and August, September and October belong to the third quarter ($Season\_3_t$). $Price_{it}$ is the listed price of product i in t period. $Volume_{it}$ is the number of reviews of product i in t period. β_s are the regression coefficients and intercept term of the model. $u_i + \varepsilon_{it}$ is the composite error term.

3.2 Results

We use "OLS + robust standard error" method to avoid heteroscedasticity and further use fixed effect model to estimate the regression parameters. The results of step-by-step regression are shown in Table 1. Model 2 shows that the coefficients of primary and secondary terms of valence are negatively significant. This result indicates that there is an inverted U-shaped relationship between valence and sales of the tourism products. As valence increases, sales first increase and then decrease. The symmetric axis of the quadratic curve is 4.1. Thus, H1 is supported. Model 3 shows that the coefficient of quality disclosure transparency is significantly positive, thus H2 is supported. The results of Model 4 and Model 5 show that the transparency of quality disclosure has a positive moderating effect on valence, thus H3 is supported. Figure 1 is presented in order to further clarify the moderating effect. The steep curve tends to gentle as the transparency of quality disclosure decreases. The direction of the curve opening is unchanged, and the elasticity becomes smaller.

Table 1 Estimation results

Variables	Model 1 FE	Model 2 FE	Model 3 FE	Model 4 FE	Model 5 FE
Constant	1.704***	1.874***	1.833***	1.999***	1.947***
	(0.151)	(0.147)	(0.150)	(0.147)	(0.144)
Control variables					
Season_2	0.063***	0.062***	0.041***	0.041***	0.045***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Season_3	0.253***	0.245***	0.178***	0.173***	0.183***
	(0.008)	(0.008)	(0.007)	(0.007)	(0.006)
lnPrice	0.041*	0.039*	0.025	0.024	0.026
	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)
lnVolume	0.636***	0.591***	0.627***	0.583***	0.569***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Independent variable					
$(lnValence)^2$		-6.429***	———	-6.391***	-6.301***
		(0.716)		(0.712)	(0.693)
lnValence		-1.623***	———	-1.607***	-1.568***
		(0.123)		(0.123)	(0.123)
Moderator					
PIT			0.089***	0.086***	0.175***
			(0.005)	(0.005)	(0.012)
Interaction					
$(lnValence)^2 \times PIT$					4.931***
					(0.503)
$lnValence \times PIT$					1.054***
					(0.067)
N	66403	66403	66403	66403	66403
R^2	0.533	0.546	0.538	0.551	0.561

Note: standard errors in parentheses, *p <0.05, ** p <0.01, ***p <0.001

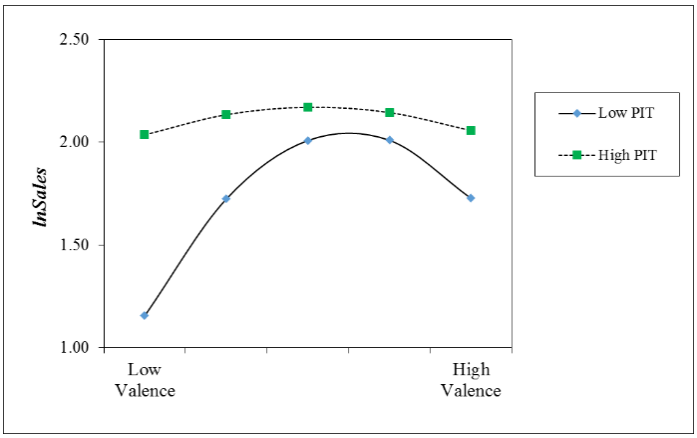

Figure 1. Moderating effect of quality disclosure transparency

4. CONCLUSIONS AND DISCUSSIONS

We have three main conclusions. First, as a self-generated quality assurance mechanism, valence has an inverted U-shaped effect on the online sales of outbound package tour products. It confirms the non-linear effect of valence on online sales, and provides an important evidence for the effectiveness of online quality signals of different products. Second, increased transparency in quality disclosure contributes to online sales growth. Our study applies the information transparency theory to the product quality governance research of e-commerce platforms, and provides a new evidence for the impact of information transparency strategy on the development of the platform ecology. Third, the increase in transparency of quality disclosure can greatly strengthen the relationship between valence and online sales. It broadens the views of platform product quality governance and supplements the research on non-price strategy in platform governance.

ACKNOWLEDGEMENT

This research was supported by the National Natural Science Foundation of China under Grant 71672183.

REFERENCES

[1] Dranove, D., Jin, G. Z.(2010). Quality Disclosure and Certification: Theory and Practice. Journal of Economic Literature, 48(4): 935-963.

[2] Oya, C., Schaefer, F., Skalidou, D.(2018). The effectiveness of agricultural certification in developing countries: A systematic review. World Development, 112: 282-312.

[3] Granados, N., Gupta, A., Kauffman, R. J.(2012). Online and Offline Demand and Price Elasticities: Evidence from the Air Travel Industry. Information Systems Research, 23(1): 164-181.

[4] Li, T., Kauffman, R. J., van Heck, E.(2014). Consumer Informedness and Firm Information Strategy. Information Systems Research, 25(2): 345-363.

[5] Rosario, A. B., Sotgiu, F., De Valck, K.(2016). The Effect of Electronic Word of Mouth on Sales: A Meta-Analytic Review of Platform, Product, and Metric Factors. Journal of Marketing Research, 53(3): 297-318.

[6] Anderson, R. E.(1973). Consumer Dissatisfaction: The Effect of Disconfirmed Expectancy on Perceived Product Performance. Journal of Marketing Research, 10(1): 38-44.

[7] Zhuang, M. Z., Cui, G., Peng, L.(2018). Manufactured opinions: The effect of manipulating online product reviews. Joural of Business Research 87: 24-35.

[8] Akerlof, G. A.(1970). The Market for “Lemons”: Quality Uncertainty and the Market Mechanism. Quarterly Journal of Economics, 84(3): 488-500.